Use Attainability Analysis

for

Water Body Identification # 3009

Cache River Ditch

Conducted by:

Environmental Resources Coalition

To:

Missouri Department of Natural Resources
Water Protection Program

Submitted: December 1, 2005

Stream Description – WB ID: 3009 – Cache River Ditch

Cache River Ditch (WB 3113) is located in the Pleistocene Valley Plains (Level VI Region 72b) of the Mississippi River Alluvial Plain eco-region. Chapman et al. (2002) characterized the region as the following:

> *A broad, flat, alluvial plain, the **Pleistocene Valley Plains** ecoregion is distinct from the dissected topography of the neighboring Ozark Highlands (39). The region was formed from Pleistocene glacial outwash deposits from the Mississippi and Ohio Rivers and subsequently covered with fertile, thick, alluvial and eolian deposits. Sand dune fields and eolian deposits also occur in the plain between the Bluff Hills (Crowley's Ridge) (74a) and the Ozark Highlands (39) to the west, and along the eastern border of Sikeston Ridge, center of the New Madrid Seismic zone. Most of the area was historically covered with bald cypress, tupelo swamp forest, and mixed deciduous bottomland forest. Natural grasslands occupied sandy terraces. Today, row crop agriculture dominates the landscape with primary production in soybeans, cotton, and rice.*

The Cache River Ditch is a seven mile long class C stream in southeastern Butler County. The classified stream reach begins at Highway N just west of Qulin (approximately six tenths of a mile) and runs south to southwest to the Arkansas state line. Approximately 0.5 mile of the seven-mile stretch lies upstream of the city of Qulin wastewater treatment facility (WWTF) (MO0094935), and the remaining six and one half miles flows south to southwest downstream of this facility. The majority of the surrounding area is in agricultural production, with exception of a few residences which dot the landscape. This water body is primarily used for field drainage and a numerous field drainage pipes entering the stream throughout the entire length of the stream segment.

Chapman, S.S., Omernik, J.M., Griffith, G.E.,Schroeder, W.A., Nigh, T.A., and Wilton, T.F., 2002, Ecoregions of Iowa and Missouri (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,800,000).

Note: During the first visit to each site, ERC selected an assessment location (either upstream or downstream) based on which side appeared deepest or most likely for whole body recreation.

Field Data Sheets for Recreational Use Stream Surveys

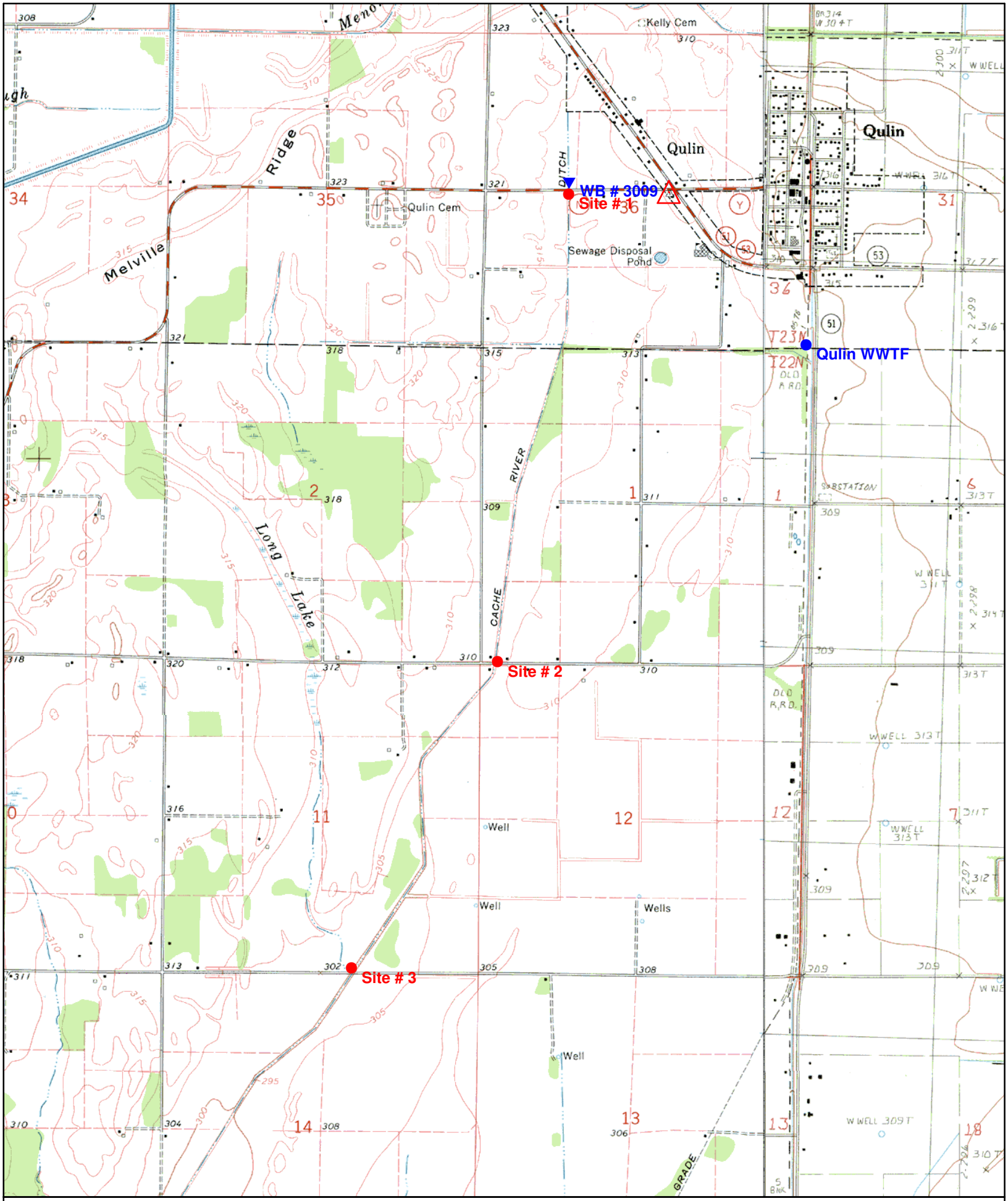
Data Sheet A: Water Body Identification

Water Body Name: Cache River Ditch
8 – digit HUC: 08020302
Missouri WBID # 3009
County: Butler
Upstream Legal Description: Sec. 36, T23N, R7E, Butler County
Downstream Legal Description: Arkansas State Line
Upstream Coordinates: Latitude 36.5657531 ° N , Longitude 90.2611872 ° W
Downstream Coordinates: Latitude 36.4981024 ° N , Longitude 90.3103487 ° W
Discharger Facility Name(s): Qulin WWTF
Discharger Permit Number(s): MO0094935
Number of Sites Evaluated: 5
Name of Surveyor and Telephone Number: Robert R. Bacon, (573) 634-7078
Organization: Environmental Resources Coalition (ERC)
Position: Director of Aquatic Services

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA sheet is true and accurate.

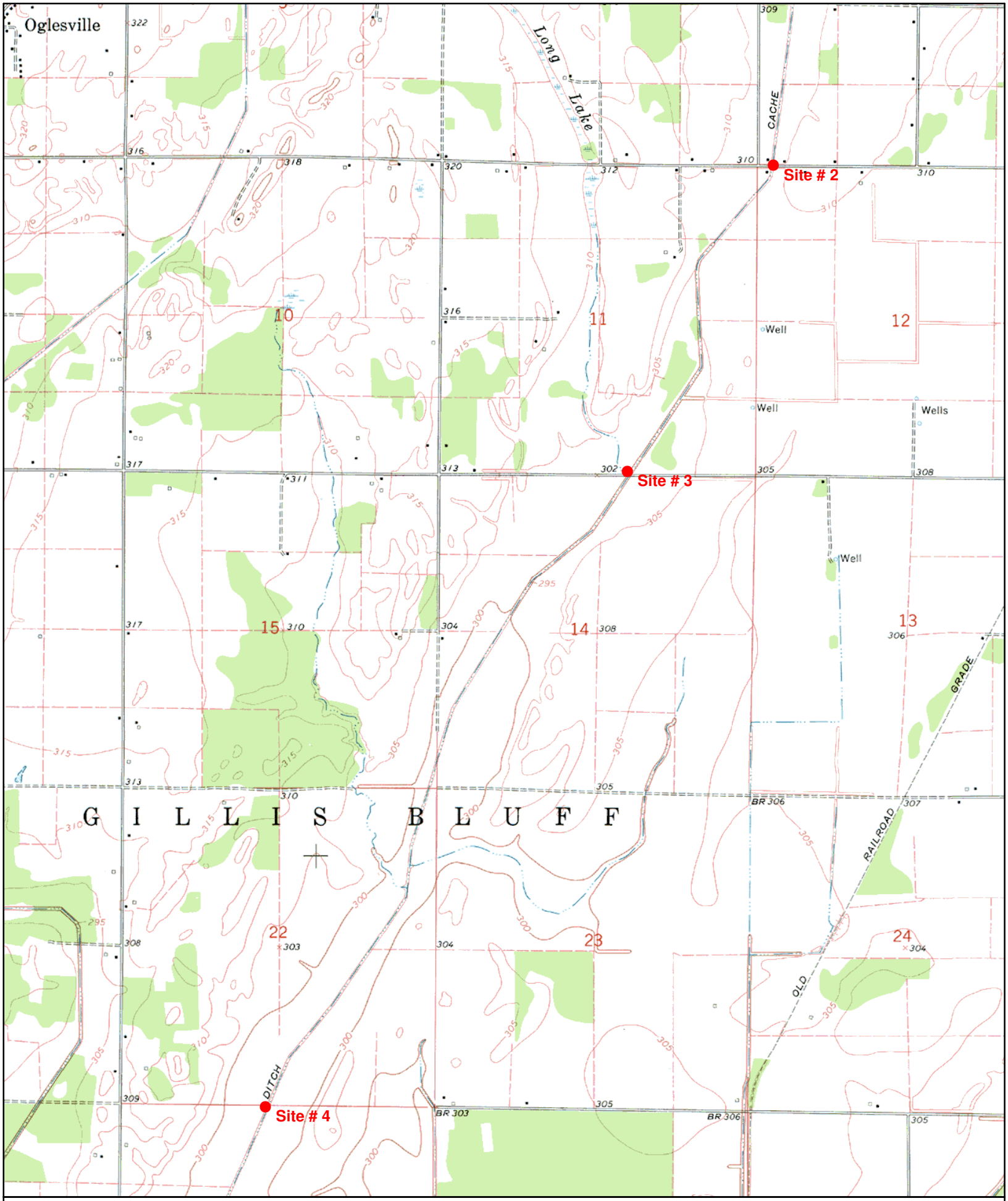
Signed: Robert R Bacon

Date: 12-1-2005



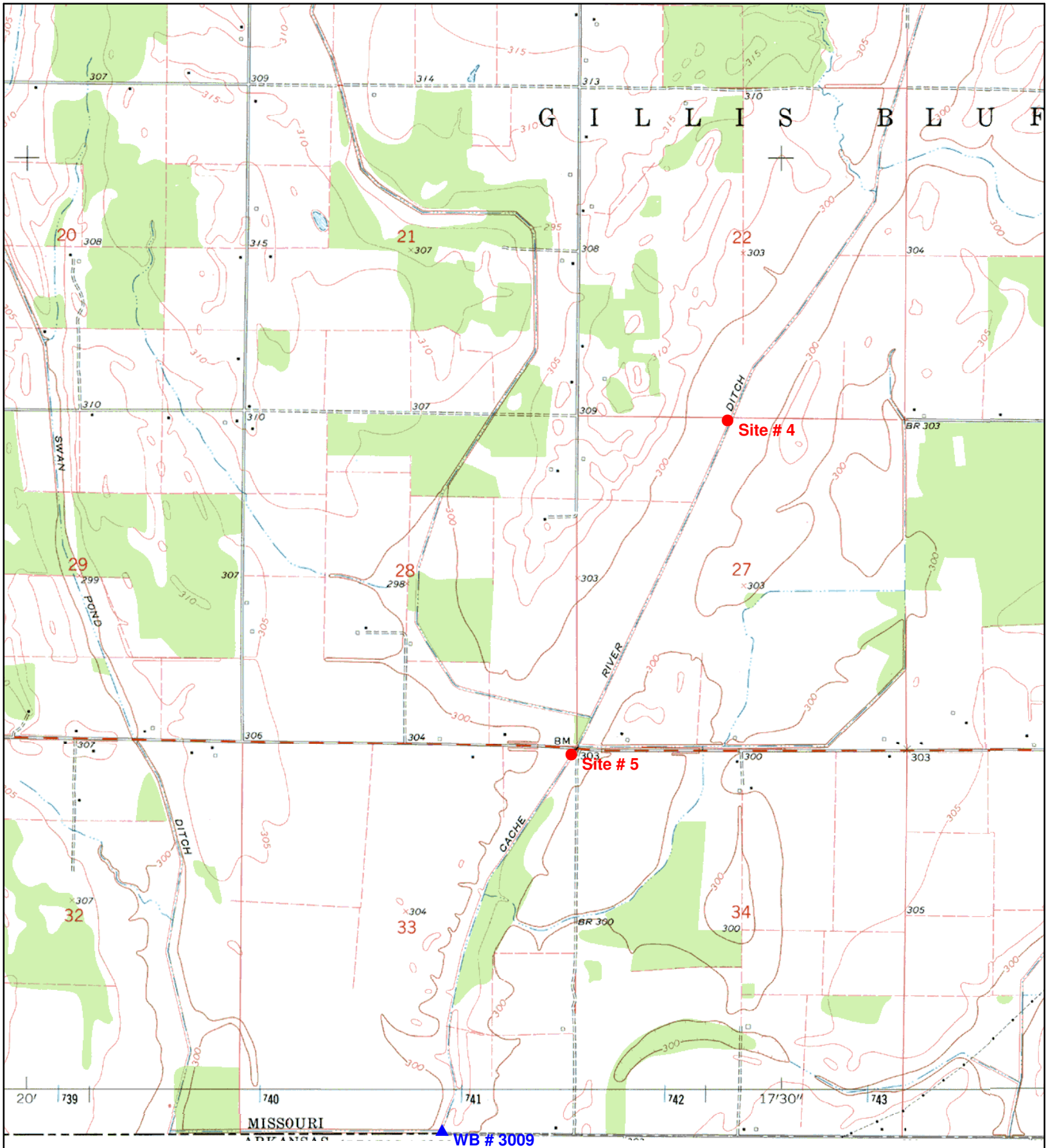
Name: GLENNONVILLE
Date: 12/1/2005
Scale: 1 inch equals 2000 feet

Location: 036.5766923° N 090.2649564° W



Name: OGLESVILLE
Date: 12/1/2005
Scale: 1 inch equals 2000 feet

Location: 036.5535344° N 090.2808789° W



Name: OGLESVILLE
Date: 12/1/2005
Scale: 1 inch equals 2000 feet

Location: 036.5207627° N 090.3058864° W

Weather Conditions

Weather conditions for the field surveys and the previous ten days are listed in the tables below.

Data from the MU Commercial Agriculture Automated Weather Station Network
Glennonville, Missouri - Rice Farm (1 mile east of Glennonville)

Date	Precipitation (Inches)	Min. Temp (ºF)	Max. Temp (ºF)	Avg. Temp (ºF)
04/05/2005	0	56.5	76.7	-
04/06/2005	0.29	56	67.1	-
04/07/2005	0.42	53.5	63.3	-
04/08/2005	0	51.9	71.2	-
04/09/2005	0	49.3	74.7	-
04/10/2005	0	57.2	78.3	-
04/11/2005	0.86	58.9	67.5	-
04/12/2005	0.02	54.1	65.6	-
04/13/2005	0.11	51.2	56.2	-
04/14/2005	0	43.9	68.2	-
04/15/2005	0	44.2	71.8	-

Date	Precipitation (Inches)	Min. Temp (ºF)	Max. Temp (ºF)	Avg. Temp (ºF)
05/23/2005	0	61.5	89.2	-
05/24/2005	0	57.5	76.6	-
05/25/2005	0	52.5	77.5	-
05/26/2005	0	52.3	80.3	-
05/27/2005	0	53.2	82.7	-
05/28/2005	0	51.7	84.2	-
05/29/2005	0	61	82.4	-
05/30/2005	0	56.3	85.5	-
05/31/2005	0	63.6	86.2	-
06/01/2005	0	64.6	81.2	-
06/02/2005	0	63.9	73.6	-

Weather Conditions (continued)

Weather conditions for the field surveys and the previous ten days are listed in the tables below.

Data from the MU Commercial Agriculture Automated Weather Station Network
Glennonville, Missouri - Rice Farm (1 mile east of Glennonville)

Date	Precipitation (Inches)	Min. Temp (ºF)	Max. Temp (ºF)	Avg. Temp (ºF)
10/16/2005	0	43.8	77.9	-
10/17/2005	0	43.6	82.9	-
10/18/2005	0	53.0	87.0	-
10/19/2005	0	55.9	90.2	-
10/20/2005	0	62.1	82.6	-
10/21/2005	0	51.0	62.8	-
10/22/2005	0	40.7	68.5	-
10/23/2005	0	37.9	57.4	-
10/24/2005	0	36.6	56.5	-
10/25/2005	0	31.0	59.6	-
10/26/2005	0	29.2	62.3	-

WB # 3009 – Cache River Ditch

Site # 1 - Highway N (north)

GPS Location **36.5959172 North**
90.261287 West

The upstream view is outside of the classified reach

Downstream Views

04/15/05

06/02/05

10/26/05

Physical Dimensions – Site # 1

	04/15/05	06/02/05
Assessment Location	Downstream	Downstream
Time	10:10AM	11:18AM
Stream Type	Run	Run
Width (m)	0.67	0.66
Length (m)	30.48	30.48
Avg. Depth (cm)	5.0	4.0
Maximum Depth (cm)*	5.0	4.0
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	0%	0%
Silt	0%	0%
Mud / Clay	100%	100%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	Vegetation on stream border	Vegetation on stream border
Water Characteristics		
Odor	None	None
Color	Clear	Clear
Bottom Deposits	None	None
Surface Deposits	None	None

* Maximum depth is the maximum depth within the stream cross-section

NOTES: Site # 1 is the uppermost assessment site on the Cache River Ditch

Physical Dimensions – Site # 1 (continued)

	10/26/05
Assessment Location	Downstream
Time	8:10AM
Stream Type	Run
Width (m)	Dry
Length (m)	-
Avg. Depth (cm)	Dry
Maximum Depth (cm)*	Dry
Flow Present	No
Flow (cfs)	-

SUBSTRATE

Cobble	0%
Gravel	0%
Sand	0%
Silt	0%
Mud / Clay	100%
Bedrock	0%
	100%

OTHER

Uses Observed	None
Evidence of Human Use (WBCR)	None
Aquatic Vegetation	None
Water Characteristics	
Odor	None
Color	None
Bottom Deposits	None
Surface Deposits	None

* Maximum depth is the maximum depth within the stream cross-section

NOTES:

10/26/05 – stream was dry – no water present

WB # 3009 – Cache River Ditch

Site # 2 - County Road 214

GPS Location **36.5738426 North**
90.2653166 West

Upstream Views

04/15/05 **06/02/05**

Downstream Views

04/15/05 **06/02/05**

WB # 3009 – Cache River Ditch

Site # 2 - (continued)

Upstream View
10/26/05

Downstream View
10/26/05

Physical Dimensions – Site # 2

	04/15/05	06/02/05
Assessment Location	Downstream	Downstream
Time	10:35AM	11:39AM
Stream Type	Run	Run
Width (m)	4.11	4.72
Length (m)	45.72	45.72
Avg. Depth (cm)	21.06	26.76
Maximum Depth (cm)*	34.0	44.0
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	10%	0%
Sand	10%	0%
Silt	40%	0%
Mud / Clay	40%	100%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None, woody debris	None
Water Characteristics		
Odor	None	None
Color	Turbid	Turbid
Bottom Deposits	4” of fine sediment	None
Surface Deposits	None	Bubbles

* Maximum depth is the maximum measured depth within the stream cross-section.

NOTES:

04/15/05 – Adjacent landowner interviewed said stream depth will quickly get shallower over time due to recent culvert replacement

06/02/05 – Stream depth is substantially increased due to local irrigation discharge.

Physical Dimensions – Site # 2 (continued)

	10/26/05	10/26/05
Assessment Location	Upstream	Downstream
Time	4:14 PM	4:14 PM
Stream Type	Run	Run
Width (m)	Dry	Dry
Length (m)	-	-
Avg. Depth (cm)	Dry	Dry
Maximum Depth (cm)*	Dry	Dry
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	0%	0%
Silt	90%	90%
Mud / Clay	10%	10%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None	None
Water Characteristics		
Odor	None	None
Color	None	None
Bottom Deposits	None	None
Surface Deposits	None	None

* Maximum depth is the maximum measured depth within the stream cross-section.

NOTES:

10/26/2005 - The upstream location of this site was mostly dry with only shallow pockets of standing water present.

WB # 3009 – Cache River Ditch

Site # 3 - County Road 220

GPS Location **36.55958 North**
90.2737824 West

Upstream Views

04/15/05 **06/02/05**

Downstream Views

04/15/05 **06/02/05**

WB # 3009 – Cache River Ditch

Site # 3 - (continued)

Upstream View
10/26/05

Downstream View
10/26/05

Physical Dimensions – Site # 3

	04/15/05	06/02/05
Assessment Location	Upstream	Upstream
Time	10:48AM	12:17PM
Stream Type	Run	Run
Width (m)	2.74	3.96
Length (m)	21.34	21.34
Avg. Depth (cm)	13.20	37.43
Maximum Depth (cm)*	22.0	57.0
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	10%	0%
Silt	60%	60%
Mud / Clay	30%	40%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None, lots of woody debris	Floating mats of algae, woody debris
Water Characteristics		
Odor	None	None
Color	Turbid	Turbid
Bottom Deposits	Fine sediment	None
Surface Deposits	Lots of organic matter	Foam

* Maximum depth is the maximum measured depth within the stream cross-section.

Physical Dimensions – Site # 3 (continued)

	10/26/06	10/26/05
Assessment Location	Upstream	Downstream
Time	4:22PM	4:22PM
Stream Type	Run	Run
Width (m)	Dry	Dry
Length (m)	21.34	21.34
Avg. Depth (cm)	Dry	Dry
Maximum Depth (cm)*	Dry	Dry
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	0%	0%
Silt	80%	80%
Mud / Clay	20%	20%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None	None
Water Characteristics		
Odor	None	None
Color	None	None
Bottom Deposits	None	None
Surface Deposits	None	None

* Maximum depth is the maximum measured depth within the stream cross-section.

NOTES:

10/26/05 – Stream is dry – No water present except for a small hole downstream where a field pipe drains into the stream. The standing water present was only ankle deep and no cross-section measurements taken.

WB # 3009 – Cache River Ditch

Site # 4 - County Road 236

GPS Location **36.5299636 North**
90.2946221 West

Upstream Views

04/15/05 **06/02/05**

Downstream Views

04/15/05 **06/02/05**

WB # 3009 – Cache River Ditch

Site # 4 - (continued)

Upstream View
10/26/05

Downstream View
10/26/05

Physical Dimensions – Site # 4

	04/15/05	06/02/05
Assessment Location	Downstream	Downstream
Time	11:05AM	12:40PM
Stream Type	Run	Run
Width (m)	3.66	5.03
Length (m)	152.40	152.40
Avg. Depth (cm)	9.96	38.06
Maximum Depth (cm)*	18.0	59.0
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	10%	0%
Silt	60%	0%
Mud / Clay	30%	100%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None, woody debris	None
Water Characteristics		
Odor	None	None
Color	Turbid	Turbid
Bottom Deposits	Fine sediment	None
Surface Deposits	None	None

* Maximum depth is the maximum measured depth within the stream cross-section.

Physical Dimensions – Site # 4 (continued)

	10/26/05	10/26/05
Assessment Location	Upstream	Downstream
Time	4:30 PM	4:30 PM
Stream Type	Run	Run
Width (m)	Dry	Dry
Length (m)	152.40	152.40
Avg. Depth (cm)	Dry	Dry
Maximum Depth (cm)*	Dry	Dry
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	0%	0%
Silt	90%	90%
Mud / Clay	10%	10%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None	None
Water Characteristics		
Odor	None	None
Color	None	None
Bottom Deposits	None	None
Surface Deposits	None	None

* Maximum depth is the maximum measured depth within the stream cross-section.

WB # 3009 – Cache River Ditch

Site # 5 - Highway N (south)

GPS Location **36.5149868 North**
90.3032981 West

Upstream Views

04/15/05 **06/02/05**

Downstream Views

04/15/05 **06/02/05**

WB # 3009 – Cache River Ditch

Site # 5 - (continued)

Upstream View
10/26/05

Downstream View
10/26/05

An Example of Irrigation Related Field Drainage Discharge

Physical Dimensions – Site # 5

	04/15/05	06/02/05
Assessment Location	Downstream	Downstream
Time	11:30AM	1:19PM
Stream Type	Run	Run
Width (m)	6.10	6.71
Length (m)	91.44	100.58
Avg. Depth (cm)	14.70	50.00
Maximum Depth (cm)*	29.75	69.0
Flow Present	No	Yes
Flow (cfs)	-	13.37
SUBSTRATE		
Cobble	0%	0%
Gravel	0%	0%
Sand	0%	0%
Silt	70%	70%
Mud / Clay	30%	30%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None, woody debris	None
Water Characteristics		
Odor	None	None
Color	Turbid	Turbid
Bottom Deposits	Deep fine Sediment	None
Surface Deposits	None	Foam

* Maximum depth is the maximum measured depth within the stream cross-section.

NOTES:

06/02/2005 – Grass has been mowed since last visit around the bridge to the stream bank.

Physical Dimensions – Site # 5 (continued)

	10/26/05	10/26/05
Assessment Location	Upstream	Downstream
Time	4:48PM	4:48PM
Stream Type	Run	Run
Width (m)	Dry	4.57
Length (m)	100.58	100.58
Avg. Depth (cm)	Dry	7.46
Maximum Depth (cm)*	Dry	14.0
Flow Present	No	No
Flow (cfs)	-	-
SUBSTRATE		
Cobble	10%	10%
Gravel	0%	0%
Sand	0%	0%
Silt	80%	80%
Mud / Clay	10%	10%
Bedrock	0%	0%
	100%	100%
OTHER		
Uses Observed	None	None
Evidence of Human Use (WBCR)	None	None
Aquatic Vegetation	None	None
Water Characteristics		
Odor	None	None
Color	None	Turbid
Bottom Deposits	None	None
Surface Deposits	None	None

* Maximum depth is the maximum measured depth within the stream cross-section.

NOTES:

A discrete measurement for the downstream assessment location on 06/02/2005 met the 0.5 meter average depth. However, this was during a period of high irrigation related field drainage discharge, a hydrologic modification, which has a very substantial and transient affect on the stream. The overall average depth of this assessment location is a 24.1 centimeters, which is much more characteristic of this stream at this site.

Site Descriptions

Site # 1: Site # 1 of the Cache River Ditch is located on Highway N north, is the upstream most site of the classified stream segment, and is upstream of the Waste Water Treatment Facility. The banks of the stream are mowed due to nearby residences.

Site #2: Site # 2 of the Cache River Ditch is located on County Road 214 and has steep banks that are approximately 60 percent brush covered. Nearby homeowner was interviewed and stated that the culvert for County Road 214 had recently been replaced and that the county road crew told him that the stream would more than likely stream quickly lose depth at this location over time. However, on the June 2nd visit, the depth was much greater than the first visit due to local crop irrigation.

Site #3: Site #3 of the Cache River Ditch is located on County Road 220. Farm fields surround the area. The vertical banks are approximately 12 feet high and are brush covered. Trash, including various appliances and tires, are scattered throughout the site.

Site #4: Site #4 of the Cache River Ditch is located on County Road 236. Farm fields surround the area, and several drainage pipes from these fields discharge into the ditch. The steep banks are 12-16 feet high and brush covered, making the site very difficult to access. Appliances, tires, broken beer bottles, car parts, and barbeque grills are some of the various items that have been dumped at this location. During the visit on April 15th, two older gentlemen on horseback stopped. Although no formal interview was conducted, they commented that "No one has been in these ditches for over 50 years."

Site #5: Site #5 of the Cache River Ditch is located on Highway N south. Farm fields surround the area. The banks were approximately 12-16 feet high and covered in brush. Along with the steep banks, stabilization rocks near the bridge made accessing the stream extremely difficult. The stream had a large amount of trash at the site which is likely due to traffic on Highway N.

I, the undersigned, hereby affirm to the best of my knowledge that all information reported on the UAA data sheets are true and accurate.

Signed: Robert R Bacon

Date: 12-1-2005

Organization: ERL

Position: Dir of Aquatic Services

Summaries of Interviews

The following interviews were conducted by Abby Welschmeyer with adjacent landowners and potential creek users. The interviews were conducted in-person, or over the phone. Some of the questions asked are as follows:

- How long have you lived near this body of water?
- Do you or your family use this body of water for recreational activities?
    - If not used, why?
    - If used, what type of activities, how many times per year, and under what flow conditions (low, medium, or high)?
- Have you seen other people using the water body? (If so, many of the same aforementioned questions apply.)

To assist in the collection of interviews, letters were developed detailing the water quality rule, our affiliation with the Department of Natural Resources, and our contact information. These letters were left at residences near the water body when no one answered the door. This turned out to be a very effective way of quickly collecting key interviews with people most familiar with the resource.

Date: 06/02/05
Time: 11:35 AM
Name: Darren Doser
Reason for Interview: lives near Site # 1

Darren Doser has lived near the Cache River Ditch for 34 years, and farms approximately four miles along the stream. He stated that he does not use the water body for recreation because of insufficient depth. Mr. Doser commented that he has seen people fishing at the water body (from bridge or culvert) about three times a month during the summer.

Date: 04/15/05
Time: 11:27 AM
Name: Angela Kiper
Reason for Interview: lives near Site # 2

Angela Kiper has lived near the Cache River Ditch for 10 years. She stated that she does not use it for recreational activities because there are too many snakes. Ms. Kiper also commented that she has not seen people recreating in the stream and speculated that was also because of the large population of poisonous snakes.

Summaries of Interviews (continued)

Date: 06/02/05
Time: 1:55 PM
Name: Finis Bradshaw
Reason for Interview: lives near Site # 2

Finis Bradshaw has lived on the Cache River Ditch for three years. He stated that he does not use the water body for recreational activities due to the large population of water moccasins. Mr. Bradshaw commented that the drainage from the rice fields is the main reason the ditch has any depth, and it is almost completely dry when there is no irrigation or rain. Mr. Bradshaw said he has seen neighbors fishing from a bridge or culvert at times during the summer months.

Date: 06/02/05
Time: 12:15 PM
Name: Wendell Craft
Reason for Interview: lives near Site # 3

Wendell Craft has lived near the Cache River Ditch for 64 years and owns approximately one mile along the water body. He does not use the stream for recreational purposes because of the large population of snakes and turtles. Mr. Craft commented that he was on the Cache River Ditch board for many years, and stated the reason for the ditch's measurable depth was irrigation. He said he has seen people stand on a nearby culvert to catch fish from the water body.

Date: 06/2/05
Time: 12:30 PM
Name: Roy Ashcraft
Reason for Interview: lives near Site # 4

Roy Ashcraft has lived near the Cache River Ditch for 47 years and farms approximately one and one half miles along the water body. He stated he does not use the stream for recreational activities for safety reasons, referring to the high numbers of snakes and turtles in the area. Mr. Ashcraft attributed the water body's depth to the substantial amount of irrigation in the area, and stated that he has not seen anyone using the stream for recreation.